# The Practical Winery

February - March

1981

Fouloir-pressoir Satre.

## NEWS FLASH... VINIFERA CERTIFICATIONS BEING PULLED

As this sixth issue of The Practical Winery was going to press word reached us that the certification of several clones of vinifera, formerly state certified has been removed due to a new and more sensitive test for virus.

The more sensitive test plant was developed by Dr. Goheen of U.C.D. and has shown a mild leafroll virus in the following vines:

| | |
|---|---|
| Zinfandel clone # | 5-FVF11V5 |
| Sauvignon Blanc | 1-MBMO13V4647<br>FVF4V678 |
| Ruby Cabernet | 1-FVH2V4 |
| Sylvaner | B2-2MBMOR14V4647<br>FVI3V13 |
| Cabernet Sauv. | 3MBMO2V19 |
| St. Macaire | unknown |

Though the virus is said not to effect production, many people are getting excited, nursery men mostly.

Current meetings are being held to determine the impact of this move, and perhaps limits will be set as to what are 'significant' amounts of virus.

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If you were wondering what your worthy editor looked like after a year in the saddle, that's me in the middle. Even with a Davis Enology degree, several years in the industry and a thriving magazine, I don't get to wear white shoes like other publishers.

YES, IT'S BEEN A YEAR.

INFORMATION ON BACK ISSUES AND RESUBSCRIPTION ON PAGE 10 AND 11

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# The Practical Winery

## THE PRODUCERS' ADVOCATE

February-March
Volume 1, No.6

Tony Norskog
Editor/Enologist

Davis Representative
Stephen Thomas

North Coast Rep.
Willis 'Tex' Sawyer

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# Anthony Claiborne of Rico's Winery

## New Mexico

Tony Claiborne, owner/winemaker at Rico's Winery, grew up in the Santa Fe area, earned a degree from The University of New Mexico in Math and Chemistry. He then studied enology at Davis for a year and worked in the Monterey area in vineyard development and wine production. On returning to New Mexico he bought a winery founded in 1947 and is engaged in premium wine production.

Tony Claiborne: It's kind of funny growing grapes around here. Right here (Albuquerque) we test out at a high region 3, low 4, but the grapes don't act that way. You can just barely ripen Zinfandel here, one out of three years it gets above 22.5, the rest of the time it's a lot lower.

Practical Winery: Why is that?

Well, it's basically because our growing season is very short, about 160-180 days, and there are also these tremendous day-night variations; 95-100°F during the day and then down to 55°F at night, regularly. We are much more thermally insulated than any other place in the country so the vines behave a lot differently. Here in the valley (Rio Grande) we have good luck with hybrids, while the vinifera dosen't make it due to winterkill. There are microclimates like Placitas (a town above Albuquerque at 6000') where the vinifera do well due to great air drainage. I believe it's the oldest Zinfandel vineyard outside of California, planted about 1910.

How was this vintage?

Hurricane Ellen came up from the gulf and dumped a bunch of rain on us this year. I didn't get to make our usual late harvest Aurora, the rain knocked the sugar back to 21.7, I even had to add acid. As a result this wine is at the low end of our price range at $4.33.

That's the low end?

Bear in mind we are paying $650 and $700 a ton, picked FOB the vineyard for hybrids. I've been trying to convince the growers we can't ship out of state until we get our prices in line with the rest of the nation.

You are also protected by a 40¢ a gallon tax on non-New Mexico wines aren't you?

Yes, while we pay a 10¢ tax per gallon. I wouldn't mind seeing it change, but I'd hate to change the status quo. We're operating under a law which allows us to make and sell wine without a liquor license which is great. A New Mexico liquor license costs about $300,000 these days. Our farm winery law was passed just after prohibition. If I had a $300,000 asset, I'd be making wine at home as a gentleman winemaker.

Why then are there only two wineries in the state?

Grape availability. The census of 1880 showed New Mexico producing close to one million gallons of wine all from vinifera. The way they grew vinifera since Spanish times was to train them like bushes and cover them over with soil in the winter. The labor costs made grape growing too expensive when the railroad started bringing in cheap California wine. We still have one vineyard near Berniallio which was planted by the Christian Brothers about 1880 and replanted early in prohibition , both times to Black Malvoisie, which they still hill over in winter.

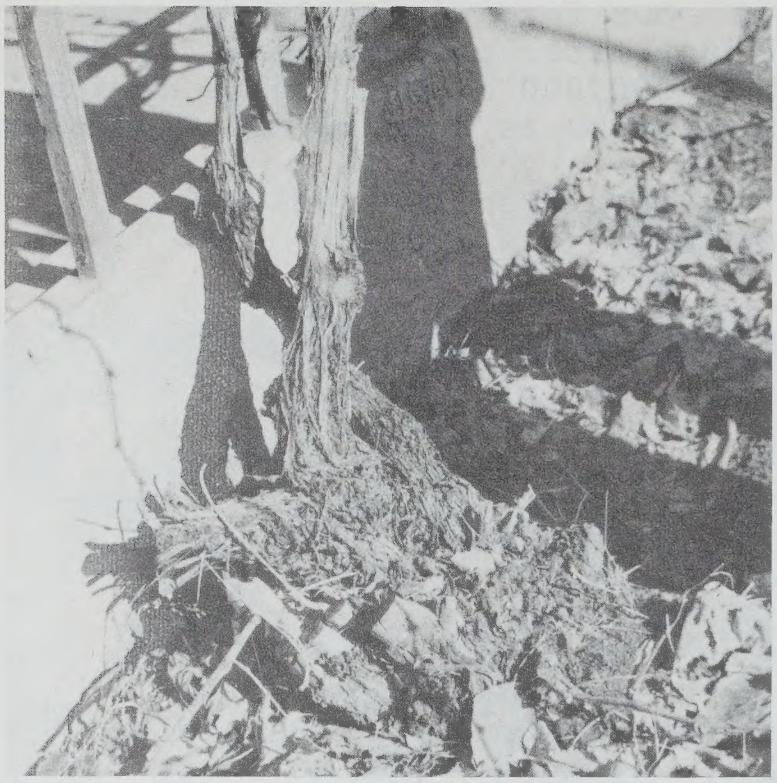
Isn't that a dessert wine grape?

Yes, but not here; we make a blanc de noir and call it Ojo de Perdís, partridge eye. We include 10% muscat sweet reserve and it's quite popular.

Do the growers use overhead sprinklers?

No, we don't have many late spring frosts. If it does freeze it's for 3 or 4 days and not a matter of hours. The frosts cause more problems in apples than grapes.

Using all recycled bottles demands some storage area. In this way Tony keeps a close eye on what people are drinking as well as saving some money, though he suffers from dish pan hands.



This is an example of the slow type of winterkill which splits the south side of the trunk open. This vinifera hangs on by sending up new trunks every few years.

Our main problem is winterkill, which involves a complex set of factors. There are several different types; if it drops to -20°F, even for ten minutes, it is going to kill your vinifera, no matter what they say. Here a more common problem is south side trunk disease. Basically we have very clear days, and the trunk can rise to 85°F, then at night the air temperature will drop to 15°F. The sap that has started to flow will freeze and split the wood. (See photo) Repeated splitting girdles the vine, then kills the vine. Another problem is that the wound is then open to fungus and other problems.

Which varieties are showing best here?

Our chardonnay will probably be Vidal Blanc. Though it's only marginally more cold resistant than vinifera, the balance is best of the hybrids. One problem is most of the hybrids drop their acid fast.

Do you have any control over what's being planted?

Yes, I'm telling everyone what to plant. The Aurora was a mistake, it's a trifle foxy; it's good but you taste it and think - Oh, other than vinifera. The hybrids we are planting give pretty clean wines

They do seem less foxy than the large east coast winery products.

Those guys don't know how to make wine. I was talking to the winemaker of one of the largest wineries in the east and he said they don't do any skin contact red fermentations; it's all hot press, and their bottle fermented champagne is only on the yeast for four months! They shouldn't be able to call that "bottle fermented".

I've never worked with hybrids; what are the tricks?

We usually pick something like Baco Noir around August 15 while our late frost comes on about Oct. 15. They ripen pretty early. They'll be 23 brix, a total acid of 1.0-1.2 and the pH is 3.9. I usually ferment the red hybrids very hot for color stability and to blow off some of the hybrid nose, about 95°F. About three days on the skins seems to give maximum color extraction, though some of the best lots of Baco will be on the skins for 5-7 days but like in some vinifera, as the color is being reabsorbed you will lose some of the fruit character. Baco has a strong tendency to brown at about 9 months. It dosen't seem to be related to the pH or oxidation, it's something in the pigments and hot fermentations seem to slow browning.

A real problem hybrid is Foch, a first generation hybrid. One of its parents was Pinot Noir, and if you take a Pinot Noir from region 3 and multiply the problem by about five, you get the difficulty of working with Foch. We will harvest it at 1.0 acid, the primary and secondary fermentation will happen simultaneously, and press the wine into barrel at 0.7 acid. In about two days it's 0.5 and starting to go vinegar sour. With such a high pH the $SO_2$ is no longer too effective. I've been tempted to put in two hundred parts When you work outside California you have to sell everything you make. I imagine there would be a few Napa Valley wineries whose reputations would be a lot lower if they had to sell everything they made.

Your cooperage looks rather eclectic.

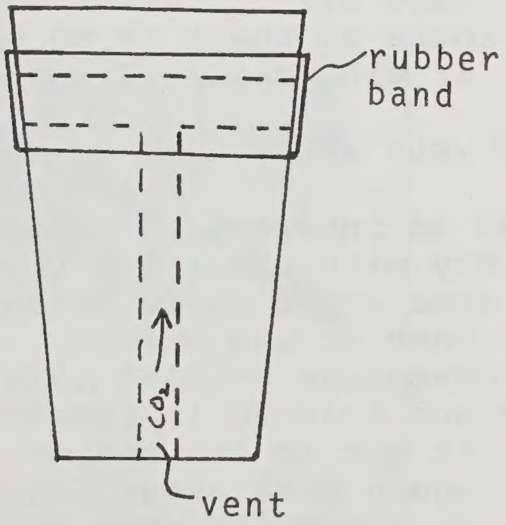
Yes, this wooden tank shaped like a barrel was used as a fermenter by Rico; we use it more for storage now. Due to the shape there was no gallon per inch chart, so to comply with the Feds I used a home computer and made a model; that really wowed them. The stainless is great, too bad the door isn't larger to get in a bigger tank. The concrete tanks we use for fermenters now. I left some wine in one once and it picked up some calcium and got real funky. Now, I paint them with paraffin each time I use them.

Are the vinifera high pH also?

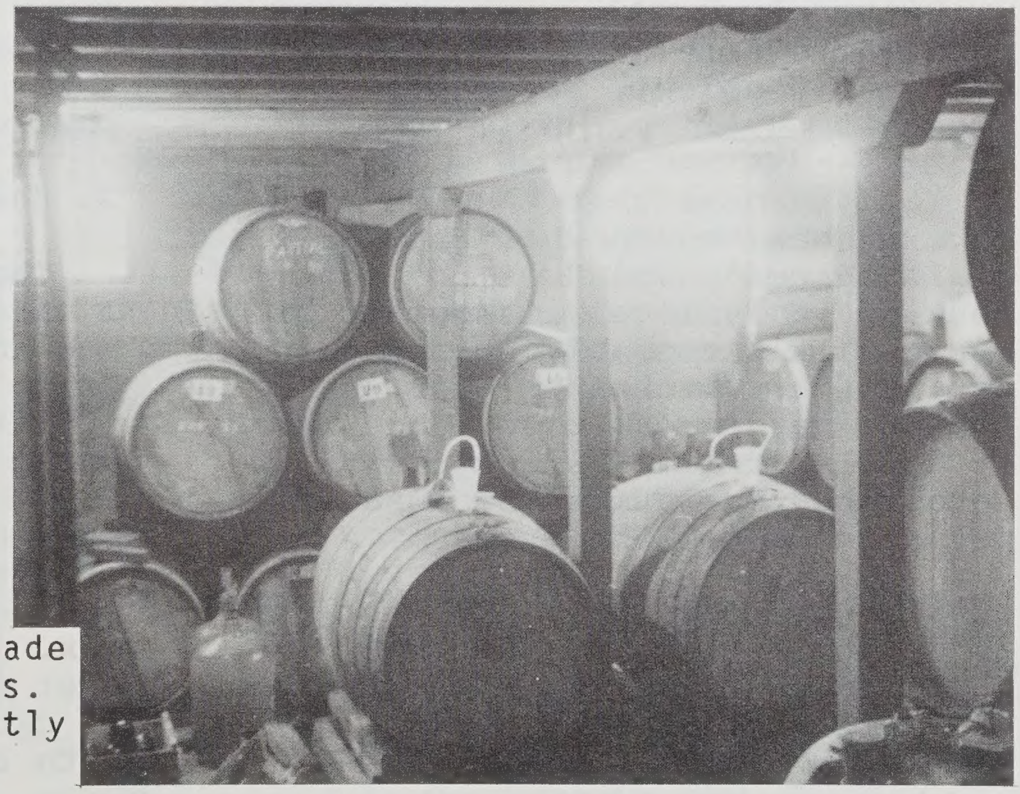
No, just the hybrids. It seems to be the nature of the beast. With wines of high pH and high acid you can't pay too much attention to the total acid because with the high pH they don't taste as tart as you'd think. Of course with the high pH they go malo-lactic quite fast which is ok as they generally can use the complexity.

What yields do the hybrids give?

They average around 4 tons per acre here. The data from back east is real ambiguous. If you compare the methodology of what they do at the Geneva station with what they do at Davis, it's a joke. I don't mean to put the good people down, but for one thing they test varieties there that have already been shown to have little or no commercial value, such as grapes with a strong lambrusca flavor. They will make yield projections from one replication of five vines and they don't even have a bonafide enologist to give the wines a chance. The problem comes in when other states that are suited to hybrids use the New York data. Then, of course, if we take the data and advice of California we run into the opposite problem. They will say - Oh, New Mexico, send Emerald Riesling and Ruby Cab. to the desert. There are a lot of assumptions people make that are hard to get around.



This is a drawing of a german made fermentation bung used at Rico's. The rubber band fits quite tightly and works well.



Some of the problems we run into out here Californians can't seem to imagine. For example I have to order standard mucilage for gluing on labels out of Denver. And in Calif. if you need a bering there is always a bearing store within a few miles. Here it's special order time and add 300% to the cost. It's nuts!

We are paying more for hybrids than most Napa Valley wineries are paying for Cabernet. Of course, some of that works in our favor; some of the consumers don't know that Baco Noir is a french hybrid, they know it as a red wine grape so they taste it without any bias.

With only 2,000 cases you must be able to ride some of the tendency of people to buy regional products.

Yes, we have that, but we also have in New Mexico what thay call 'malanchisma', which is the idea that if it is local its got to be cheap. It's probably not as good, but it's a lot cheaper than anything else you can get. This makes it hard to unload a wine for $5.00 retail, but we have to because we pay so much for the grapes.

We made some wine from distressed grapes this year and made the deal with the grower that we would pay him when the wine was sold, and pay 100 times the bottle price.

I wish we could do that here. The Baco I sell for $4.50 and pay $720 for the grapes; I'm really taking a beating.

What brought you to a frontier area like this?

I grew up around here, in Santa Fe. You know, I liked your article on Thomas Kruse. He doesn't know me, but he inspired me to do this operation. He runs his on a shoestring and never-the-less he manages to feed his family. It's clear he's not independently wealthy. Here, taste this wine, it's from those old Zins; sometimes they get peppery, growing so close to the ground, they have a tendency toward powdery mildew. That tends to enhance the peppery flavor.

You find that correlation to be true?

Oh yes; some of the whites we make from a vineyard south of here that grows vinifers get solidly peppery, and it is due only to the powdery (mildew), it is clear. We don't get mildew that often; most of the growers don't spray or sulfur. I recommended to all the growers this year to put on wetable sulfur. Some of the vineyards were getting wiped out, like I've never seen in California. Defoliated!

Also, we have all our vines on their own roots as there is no major phylloxera. It winterkills I think.

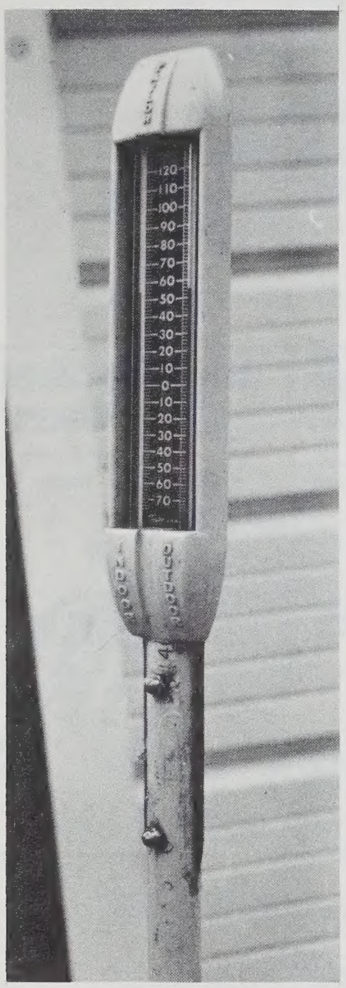
How did your apple wine go over?

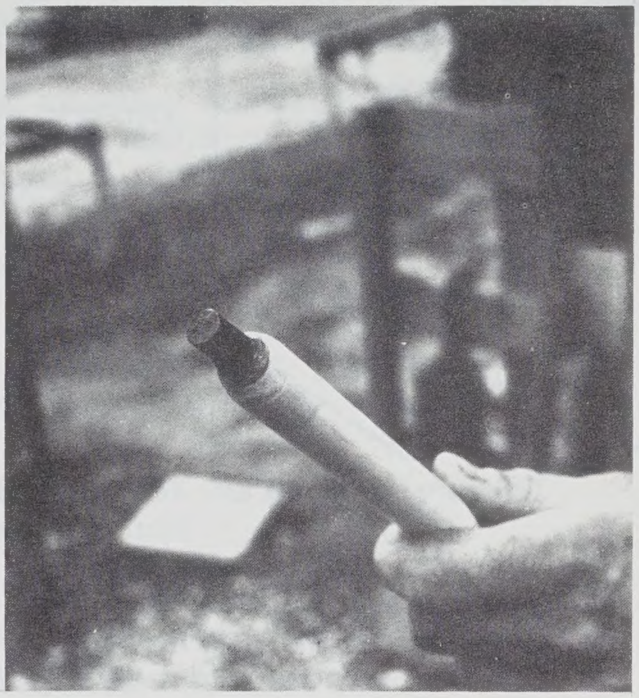
That was an interesting problem. I made it dry with about 8.5 alcohol and added some apple juice concentrate just when it was bottled. I put it in champagne bottles with crown caps and shipped it immediately. When it got to the consumer it was dry again with about 5 atms. pressure. It was still when we shipped it so we paid still wine tax. I thought BATF would jump all over me, but nothing came of it. It didn't sell too well, dry and with a natural sediment.

The Practical Winery proudly presents this years much coveted, zircon encrusted

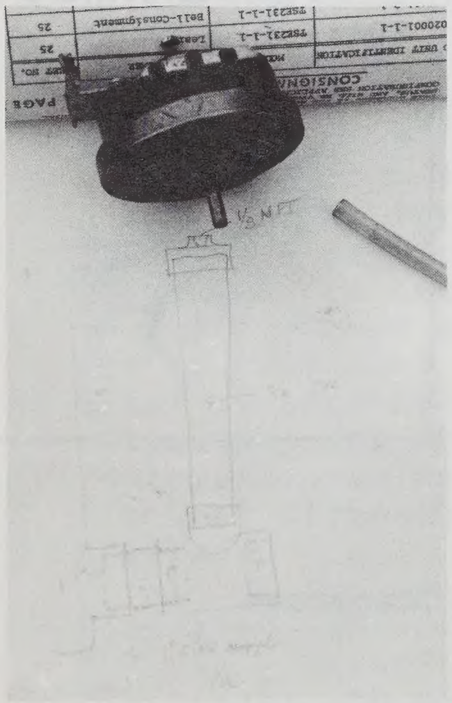
## SALVAGE TECHNOLOGY AWARD

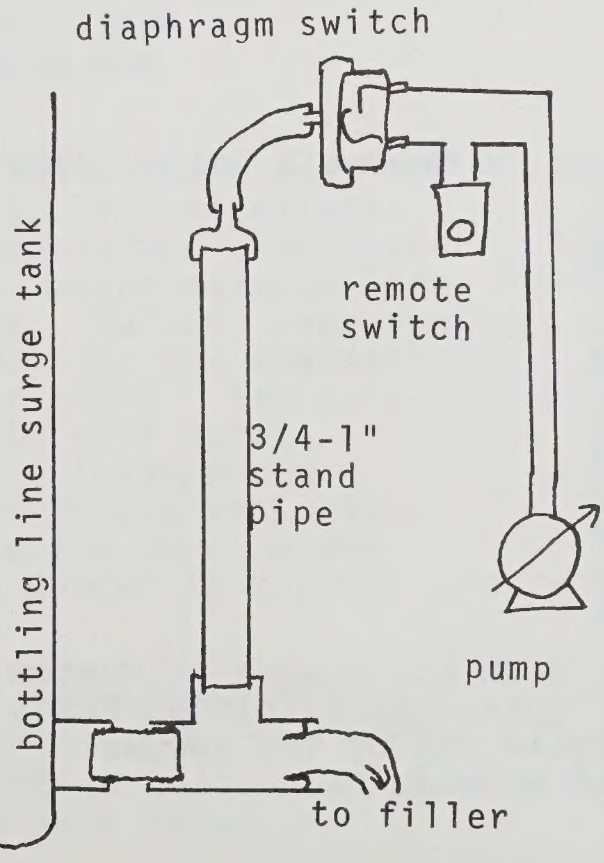
### JOHN KENWORTHY
### OWNER OF KENWORTHY VINEYARDS OF AMADOR COUNTY, CA.





Though John hasn't yet released any wine (and it will be our pleasure when he does), he has come up with a couple of adaptions, impressive in their simplicity and low cost. The above fermenter temperature probe is simply an indoor/outdoor thermometer. With the flexible, six foot tube to the outdoor element running inside a piece of pvc, John sealed the bottom end and holds the sender bulb in place with silicone sealant. My hat is off.





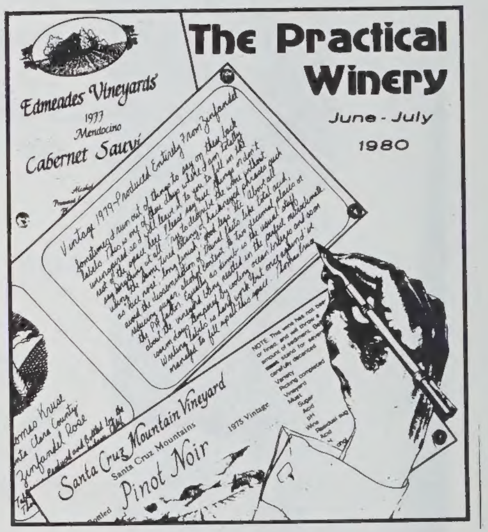
John, getting tired of trying to regulate the flow of wine into the reservoir of the Italian hand filler he uses, has devised this surge tank level controller. Using the diaphragm switch from a discarded clothes washer, he has the pump on automatic control to refill the ten gallon tank. The minimum and maximum level control comes with varying the diameter of the stand pipe. Using a Whirlpool switch and a 3/4" pipe gives a 3" level variation between switch points. Using 1/2" id. should reduce the on/off switching.

By the way, John also claims credit for the soaker hose trick for cooling fermenters mentioned in the interview with his good friend, Ken Burnap, Vol.1 #2

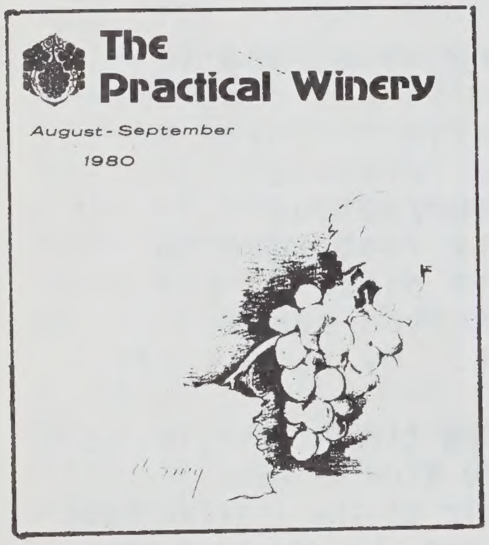
## HAVE YOU READ ALL THESE?

If not, for no charge you can get a copy by including a note with your re-subscription; Envelope inside back cover.
This offer expires April 1, 1981.

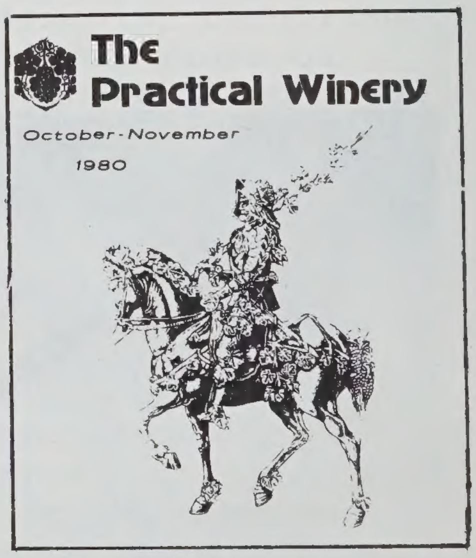
Interview with Josh Jensen of Calera Wine Co.
... Francis Mahoney of Carneros Creek.
Sugar Determination via the Rebline method.
Cleaning up the Refrigeration System.
Many Practical Ideas.



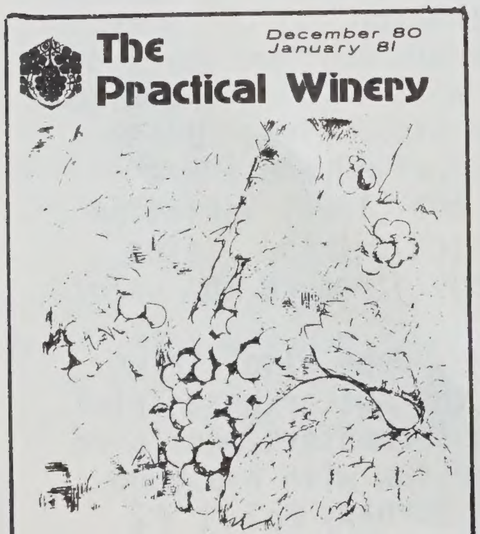
Interviews with Jed Steele of Edmeades Vineyards
Ken Burnap of Santa Cruz Mtn. Vyds.
$SO_2$ via Iodide-Iodate
Review of the Principles of Depth Filtration
Review of Polyethelene Tanks
Robert Pecota on saving energy



Interview with Jim Lawrence of Lawrence Winery
$SO_2$ via Ripper method and Platinum Electrode
Review of Tartrate Stability
Practical Ideas of Arterberry Ltd; Carey Cellars
Bruce Rector on Wood



Interview with Richard Keene of McDowell Valley Vyds.
Enzymatec Wine Analysis
Acid Reduction By Jed Steele
Various other practical things



Interview with Bob Rogers of Custom Cooperage
Equipment Notes- Spotlight on Pumps
Use of Liquid $SO_2$ by Tex Sawyer
History of Nouveau Production By C. Sullivan.

DEAR READER

RE: GREAT THINGS COMING IN THE SECOND YEAR

We are finally getting organized. That's not to say the style of this most useful magazine will change much, but the content will be better organized.

The interviews will continue with the winemakers who have something to say, and in addition we will be interviewing some of the technical support people who deal with wine problems.

The new addition of Equipment Notes with the reader inquiry cards has been a great success and we encourage you to continue to send them in. Only in this way can we keep in touch with technology as it progesses.

All other sections will continue as per plan so don't miss a thing.

FLIP TO THAT BACK COVER, TEAR OUT THAT PAID ENVELOPE AND DEMAND A RE-SUBSCRIPTION! DON'T MISS OUT ON ANY PRACTICAL IDEAS!

| ISSUE 1981 | SPOTLIGHT ON... |
|---|---|
| APRIL-MAY | FILTRATION AND SEPARATION EQUIPMENT |
| JUNE-JULY | CRUSHING AND PRESSING EQUIPMENT |
| AUGUST-SEPTEMBER | BOTTLING AND PACKAGING EQUIPMENT |
| OCTOBER-NOVEMBER | PUMPS, VALVES AND FITTINGS |
| DECEMBER-JANUARY | HEAT TRANSFER AND COOPERAGE |
| FEBRUARY-MARCH | LABORATORY AND INSTRUMENTATION |

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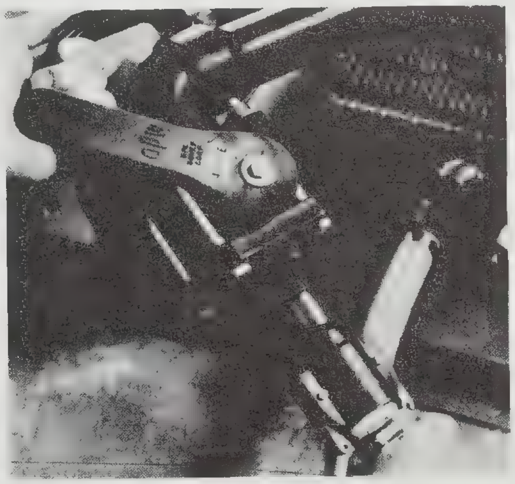
For more information on the following pieces of equipment, turn to the back cover and circle the appropriate number on the return envelope.

## VALVES AND COUPLINGS FOR ABUSIVE SERVICE



Ball valves, nozzles, tank caps and clamp type couplings for pipelines are molded from fiberglass reinforced polypropylene for longer service life in abusive service. Valves, caps and quick-connect couplings are available in a full range of sizes. The polymer is resistant to most acids, alkalis, chemical solutions and solvents. The 30% fiberglass reinforcement provides the tensile and flexural strength needed to avoid breakage.

Poly-line Kamlock Valves and fittings-
POW Div., Dover Corp., P.O. Box 40240
Cincinnati, OH 45240

circle 1 inside back cover

## PLASTIC METERING PUMP CAN BE STERILIZED

Metering pump features a glassfilled Ryton$^{O}$ polyphenylene sulfide body and Hastelloy alloy C fittings to resist attack by a wide variety of corrosives and withstand (autoclaving) and repeated cleaning with harsh chemical solutions. The pump can be used for pressures to 50 psi, temperatures to 200°F , and for fluids with either high or low viscosity. It is available in 2 sizes with capacites to 140 gph, driven by a TEFC motor at 1725 rpm. The compact unit has a flexible coupling between the pump head and motor which eliminates metal-to-metal contact to substantially reduce noise levels and increase pump and motor life.

Model HR-M pump- Tuthill Pump Div.
Tuthill Corp., 12500 S. Pulaske Rd.
Chicago, IL 60658

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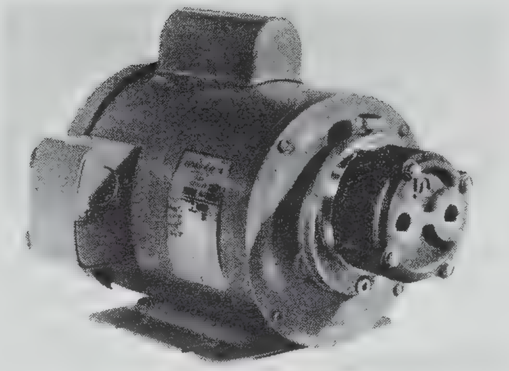
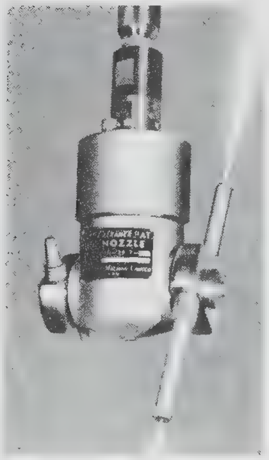




## DOUBLE ROTARY ACTION SPRAY NOZZLE

Tank cleaning system features double rotary action spray nozzles to effecivley cover the interior surface with a concentrated high pressure water jet that quickly and efficiently removes the toughest deposits of solids. System eliminates the need for personnel to enter the vessel and reduces down time.

Sugino Nozzle systems- NLB Corp.,
29830 Beck Road, Wixom MI 48096

circle 3 inside back cover

## SHELL-AND-TUBE EXCHANGERS FOR LOW FLOW RATES

A line of compact shell-and-tube heat exchangers that efficiently transfers the heat of fluids with low flow rates optimizes small capacity heat transfer applications. Miniature shell-and-tube heat exchangers feature closely packed and baffled 3/32" diamater copper tubes in a compact shell to maximize transfer area and optimize efficiency at low flow rates.

These 1 or 3 pass configurations maintain the velocity of most fluids with flow rates less than 5 gal per min for 1 pass and 2 gal/min for 3 pass.

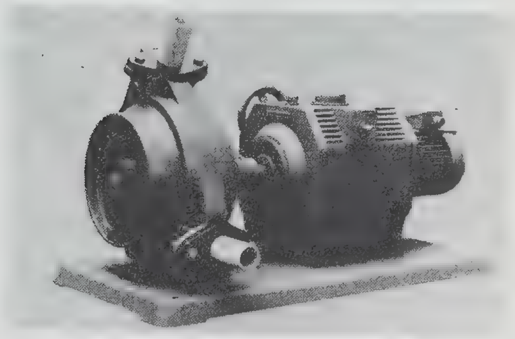
Miniature heat exchangers can handle fluids ranging in temperature from -55 to 150°C and pressures ranging up to 400 psig. The heat exchangers are easy to install and maintain and have removable bonnets with neoprene O-rings.

Miniature shell-and-tube heat exchanger
Exergy, Inc., Box F3/1062 Main St.
Hanson MA 02341

circle 4 inside back cover

## FRENCH MADE PERISTALTIC PUMP

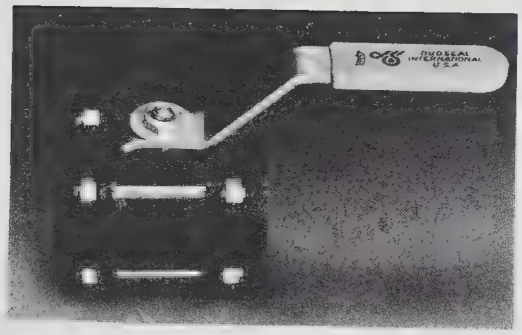
It is designed in bore sizes ranging up to 2". The pump can transfer or meter corrosive liquids and effluents, suspensions or slurries, and shear sensitive materials. Pumping units are offered in stationary or portable models, with single speed or variable flow control, and are driven electrically or pneumatically driven.

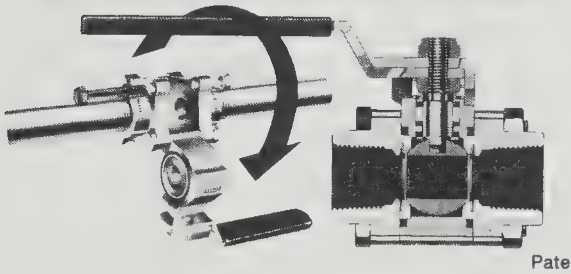


Peristaltic Pump- Pompes Delasco, French
Expositions in the U.S., Inc. 40 W.
57th st. New York, NY 10019

circle 5 inside back cover

## THREE PIECE BALL BALVE HAS SWING-OUT CENTER





Patented

Three-piece ball valve features a simple design that allows the center piece to swing out for inspection by removing a single bolt. Other features include blowout-proof stem, type 316 stainless steel trim, and glass-filled PTFE seats and stem and gaskets. The valve is available in eight sized from ¼" through 2 " in full bore and reduced bore configurations with a choice of threaded or socket weld ends.

DIS 3-Piece Ball Valves- Valve Div.
Zidell Explorations, Inc, 3121 S.W.
Moody Ave., Portland, OR 97201

Also: Whitney Co., 318 Bishop Rd.,
Highland Hts., Ohio 44143

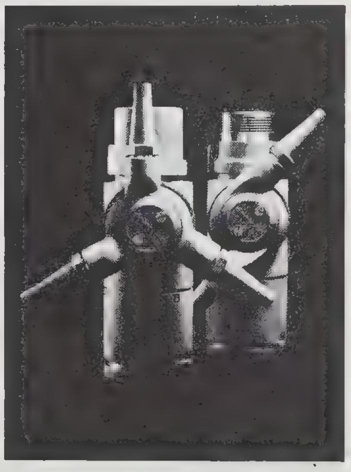
circle 6 inside back cover

## FOUR DIFFERENT SPRAY NOZZLES

Four different models with interchangable nozzle sizes to fit each, offer total versitility in CIP tank cleaners. Available in both silicon bronze and 316 stainless steel.

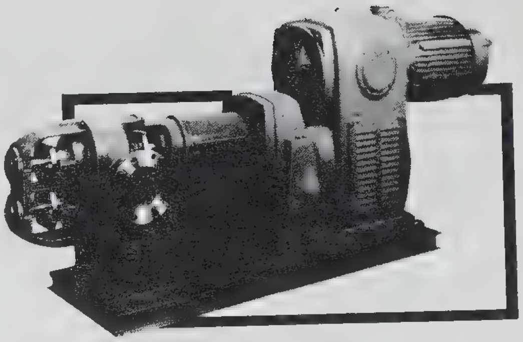
Sybron/Gamlen
333 Victory Ave. South San
Francisco, CA 94080

circle 7 inside back cover



## EXTERIOR TIMING GEARS PROVIDE LONG LIFE

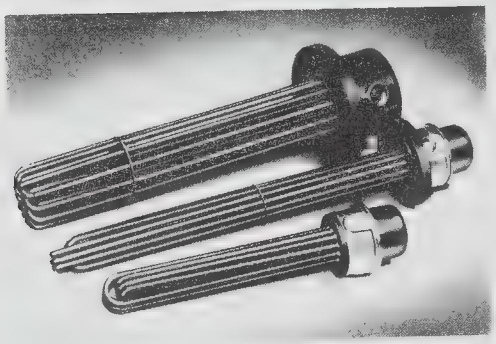
For pumping slurries, suspended solids, acids and more this pump offers much longer life. The secret is a unique rotary positive displacement action, based upon the slow positive movement of impellers syncronized by exterior timing gears. They can run dry without damage and can operate under high vacuum conditions, in either metering or transfer applications. They are supplied in a wide variety of materials for corrosion resistance against strong acids or bases. Port sizes to 6", capacities to 148 gallons per hundred revolutions with 600 rpm maximum.



Tuthill Pump Division, 12500 South
Pulaski Rd., Chicago, Ill. 60658

circle 8 inside back cover

## ELECTRIC IMMERSION HEATERS



Steel sheath heating elements are used to reduce the viscosity of heavy oils in heat transfer systems, in-line production systems, commercial boilers and tank heating systems.

Electric immersion heaters can be customized to any length, diameter or voltage. The units can also be weather or corrosion proof. All parts can be fabricated from a wide assortment of metals and metal alloys.

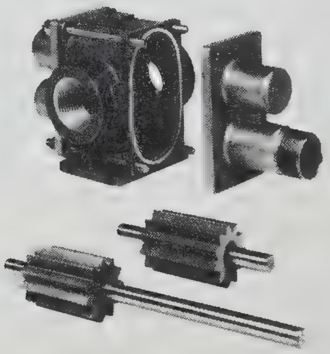
An optional, integral thermostat can give precise temperature control throughout a wide range of flow conditions. Heaters can be supplied with 2" NPT plug or 3-20" ANSI steel flanges.

Electric immersion heaters- Lectricoil-
Heat transfer Products, Div. of A-T-O
Inc., 2201 Atlantic Ave., Manasquan,
NJ 08736

circle 9 inside back cover

## GEAR PUMPS ARE SIMPLE IN DESIGN

Casings come in six different corrosion resistant metallurgies including 316 stainless steel. The gears are selected from a wide variety of metallic and non-metallic materials to match service conditions. Flow rates to 25 gpm and discharge pressures to 100 psi.



ECO Pump Corporation, 2387 S. Clinton
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## THREE WHEELED FORK LIFT

Line of three-wheel electric fork lift equipment has capacities of 1600 and 2000 lb. Trucks have been engineered to be highly maneuverable. Large tires allow work on almost any surface and attachments designed for specific use with the truck make it versatile.

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Three wheel electric trucks- Professional Materials Handling Co. Inc.
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Little Neck, NY 11363

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High-speed separators- SWECO, Inc.,
6033 E. Bandini Blvd., Los Angeles,
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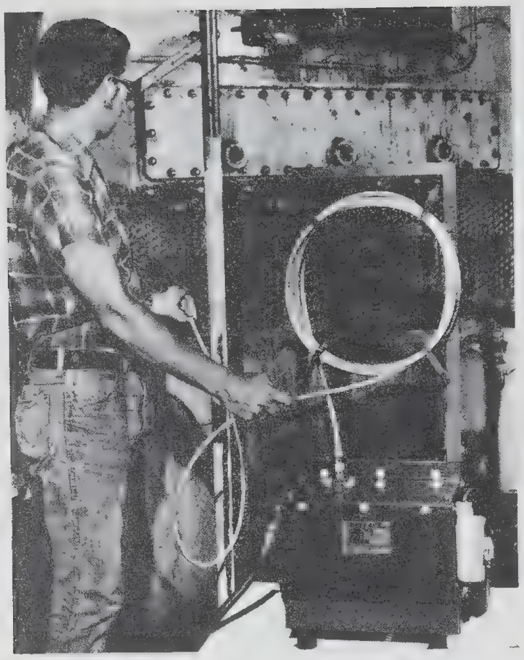
## SUBMERSIBLE PUMP RATED AT 2500GPH

Submersible pump with 1/3 hp 115 v motor is rated at 2500 gph with a head of 20'. It is available in a non-automatic or automatic model. The latter unit incorporates a solid state electronic switch so the pump starts when water is 10½" deep and stops automatically when the level falls to 5½".

Submersible Pump Bul 358- Flotec Inc., 14515 S. Carmenita Rd.
Norwalk, CA 90650



## TUBE CLEANING MACHINE

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Ream-A-Matic tube cleaner-
Goodway Tools Corp., P.O. Box 3444,
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# Fining Wine in 1888

## -ONLY USE HOGS BLOOD?

In preparing for an up-coming article on fining, I was reading over some of the material of what was known in the last century. What I found is quite impressive in its grasp (if only empirically) of the principles of fining in the Annual Report of the Chief Executive Officer of the Board of State Viticultural Commissioners for the year 1888.

Though it is written in a rather redundant style, and is a little heavy handed in the amounts recommended, it is still an excellent review, as many of the treatments are used today.

"Before dicussing the different methods of fining, we will say that, though it is very important to fine turbid wines on account of the coloring matter, the ferments and the salts which they keep in suspension and which impart to them a common taste and make them liable to undergo an after-fermentation, it is also desirable to avoid the too often use of artifical methods of fining.

For by these operations not only the insoluble matters, which are in suspension, are precipitated, but also the different preserving elements of the wine, which otherwise would not become insoluble, excepting after a very long time. These latter subltances are tannin, the various mucilaginous substances , and the pectin , which impart to the wine the mellow and fruity taste and the oily consistency.

The repeated treatments with finings affect these qualities and destroy them in the end; they make the wine dry and thus remove that which imparts particularly to the first class wines their principal value. To prove this assertion we can state that we have always noticed that well made and properly treated wines which cleared prefectly after standing some time- judicious racking only having been applied, but no artificial fining- are superior in every respect to those which have repeatedly undergone an artificial treatment; they possess also more fruity taste, are more oily, and show more color.

It is,therefore, not advisable to apply finings, particularly in the case of first class wines, excepting when a perfectly bright condition cannot be obtained by natural means. It is never advisable to apply artificial means, unless it is absolutely necessary; and it is important to find among them substances which are able to clear the wine perfectly without altering the color and the taste; these substances should likewise possess the property of not leaving in the liquid any soluble residue, and they should exercise their action by rendering insoluble as little matter as possible.

The substances commonly used in fining wines can be divided into six classes, according to the difference in their action; this action can be purely mechanical, or may give rise to some chemical reaction; it may be the coagulation by alcohol or tannin, or the neutralization of the tartaric, acetic acids, etc.; it may also consist in a partial solution of certain substances in the wine.

1) Substances which exercise but a simple mechanical action without leaving in the wine a soluble residue; unsized gray paper, reduced to a pulp, fine and siliceous sand, filtration through a strainer, etc.

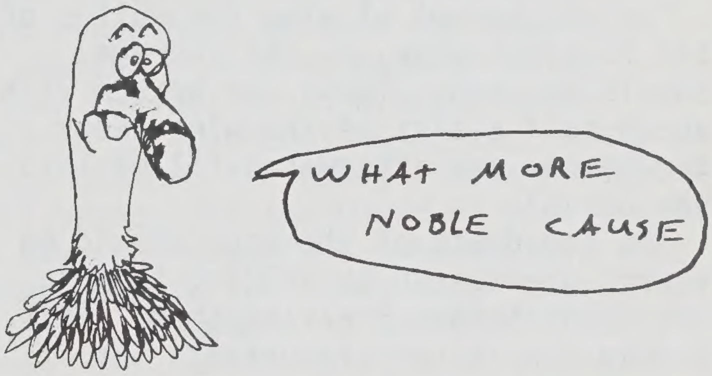
2. Alkaline substances, which exercise a mechanical and chemical action by neutralizing a part of the acids contained in the wine, and by forming with them soluble salts, calcined and pulverized pebbles, calcined oyster shells, pulverized marble, pulverized chalk, calcined magnesia, etc.

3. Albuminous substances, which exercise a chemical and a mechanical action, and which are mainly coagulated by alcohol and in a lesser degree by tannin, without leaving in the wine a soluble residue: pure albumen, (fresh white of eggs).

4. Gelatinous substances, which exercise a mechanical action: they are precipitated chiefly by the tannin which is contained in the wine, and do not leave soluble residues, as gelatine, isinglass.

5. Albuminous substances, which are not entirely coagulated by alcohol, and a part of which remains disolved in the wine: fresh or dried blood, milk.

6. Various gelatinous, viscid, or gummy substances, which are not entirely coagulated and precipitated by tannin and alcohol, and a portion of which remain dissolved in the wine: a decoction of animal sinuews, gum arabic, starch, rock candy, a decoction of rice, etc.



FRESH WHITE OF EGG

Albumen is an organic matter which is contained in the white of eggs, in the blood of animals, and in milk. Its constitutents are (in parts by weight): Carbon, 53.33; oxygen, 23.70 hydrogen, 15.50. Thus it differs from gelatine only by the relative proportion on the constituents. This substance, which is fluid, is soluble in cold water. it coagulates at a temperature below 122 degrees F. It is coagulated also in the cold by alcohol and tannin. These properties are utilized in the process of fining dry and sweet wines, cordials, and syrups. To fine liquids, which stand easily a higher temperature (as, for instance, the syrups,) albumen is dissolved in the liquid, cold; then the whole is gradually heated; the heat coagulates and unites the molecules of albumen which are suspended in the liquid, expands them, and makes them specifically lighter: they rise to the surface of the liquid, and carry with them the impurities which they meet.

If the albumen is dissolved in cold alchoholic liquids, it is coagulated by the alcohol and tannin which are present. It forms a kind of network, which has a higher specific gravity than wine, and sinks by its own gravity to the bottom of the cask, carrying down all matters in suspension.

Pure albumen is contained in the white of egg. According to M. Payen, there are 12½ to 30 per cent of albumen in the white of egg. This albumen is liquid and inclosed in very thin-walled cell. This kind of tissue imparts to the albumen a gelatinous consistency. By suspending the white of egg in water and beating the liquid, the walls of the cells are destroyed, and a clear solution is obtained.

For one barrel of wine the whites of six to eight eggs, on the average, should be used. These are beaten with about half a pint of the wine under treatment, and afterwards filled into the barrel.

The soundness of the eggs should be always acertained by holding them to the light before breaking them. This precaution is very important, for it becomes evident that one rotten egg is more than sufficient to impart a disgusting taste to a barrel of wine.

If the wine under treatment is not of high quality, is young, very turbid, and does not clear easily, the white of eggs should be disolved and beaten in one pint of water, in which a handful of common salt has been disolved. The object of this addition of salt is to give more weight to the albumen, also to increase its density, and to precipitate it quicker to the bottom. We do not, however, advise the use of salt water, except for ordinary and very turbid wines. To experiment with it on first-class wines and old wines, should the alcohol percentage of the wine be very low, an addition of one or two quarts of brandy to the barrel will promote the coagulation of the albumen.

### FRESH OR DRIED BLOOD

According to Riffault the blood contains usually three parts of serum and one of cruor. The serum does not contain gelatine, but a great deal of albumen. The cruor contains insoluble fibrine and a soluble coloring matter. The blood can therefore be used for fining instead of albumen, as it contains a good deal of albumen: but the blood of the ox, of the cow, or of the sheep, has a smell and a taste which is not agreeable. The blood of the hog is the best for this purpose. It is important that the blood should be odorless and tasteless, because it is only partly coagulated by the alcohol contained in the wine. Thus its aqueous part remains mixed with the wine, and is liable to impart to it a disagreeable taste and smell, which disappears only after a long time. For these reasons the use of blood for purifying old and fine wines should be avoided. The quantity which is usually employed is one quart per barrel, well mixed with one quart wine or of salt water.

### MILK

Cow's milk contains, according to M. Payen, in one hundred parts by weight: Water, 86.50 parts; nitrogenous matter (caseine albumine matter, soluble in alcohol), 4.30 parts; lactose (milk sugar), 5.20 parts; butter (or fatty matter), 3.70 parts; insoluble salts, 0.20 parts; soluble salts, 0.10 parts.

One can see from this enumeration that the milk cannot be completely coagulated by the alcohol which is contained in the wine. The whey, or the watery part remains in solution, and the milk sugar may give rise to an undesirable after-fermentation. The use of milk should be, therefore, avoided in the treatment of fine wines. The milk also exercises a discoloring action, and can be used for bleaching russet white wines. The quantity to be used is one quart per barrel and is poured in without mixing it previously, either with wine or with water.

Milk has an alkaline reaction, and may thus be useful in diminishing the acidity of faulty wines, clarifying them at the same time. Always use the freshest milk.

### GELATINE.

Gelatine is an organic substance which is chiefly contained in the sinews and in the hide of animals, in the bones and in certain parts of the body of fishes; it is extracted from these different materials by prolonged boiling with water. According to Gay-Lussac and Thenard it contains (parts by weight): carbon, 47.8; oxygen 27,2; hydrogen 7.9, and nitrogen 16.9

Gelatine is susceptible of assuming, on cooling, an elastic consistency, and is coagulated by heat, without possessing the property of becoming liquid again on cooling.

Gelatine is soluble in water; it is precipitated by tannin and on the other side tannin which is dissolved in a liquid is precipitated by gelatine; thus the two substances by forming an insoluble compond carry down with them the matters which are suspended in the liquid. On this quality the use of gelatine in the fining of wines is based. If tannin is present in the wine only in small quantities, the whole quantity of gelatine which was added will not be precipitated and will thus remain in solution; in such a case it will be necessary to add some tannin to the wine in order to facilitate the precipitation of the gelatine. It is possible, however, to precipitate the gelatine without the help of tannin by adding to the solution of gelatine just before using it alkaline substances, such as ashes, soda, lime, chalk; but these substances, though they increase the effectiveness of the gelatine, are objectionable, and we have already considered their action on wines.

Gelatine, of all the chemical finings, is one which is most efficient if the wine contains sufficient tannin to precipitate it in full. But the loss of tannin is injurious to the keeping qualities of the wine, and the gelatine which is used to fine red wines, precipitates, together with the tannin, a considerable part of the coloring matter which the tannin is intimately combined. For this reason gelatine should be used in thetreatmentof red wines, only when it is desirable to diminish their harshness by removing the excess of their tannin and of their color.

The utility of gelatine in the treatment of ordinary white wines cannot be denied. Should it now and then happen that a white wine does not clear on being treated with gelatine, one hundred and fifty to three hundred grains of tannin should be added to each barrel so as to make the precipitation of the gelatine more complete. Nevertheless we advise treatment of the finer white wines of a mellow character rather with pure albumen than with gelatine, in order to avoid an excess of precipitation, which could possibly carry down also the sweetish matters contained in the wine.

## ISINGLASS

This isinglass is extracted from the air bladder of the sturgeon. It contains a large amount of gelatine, and, like the latter, is precipitated by tannin. It does not require, however, much tannin for its precipitation. It contains exceedingly tenuous membranes, which exercise a mechanical action, and are precipitated by their own weight. To prepare the fish-glue for the purpose of fining, the leaves of this material are beaten on a block and cut in as small pieces as possible. One and three quarters ounce for each barrel are soaked cold with half a pint of white wine during twelve hours. When the glue is thus almost disolved, it is pressed repeatedly between the fingers, and a quarter of a pint more of white wine (per barrel) or in winter, water (warmed to 122 degrees) is added. After that the mixture is strongly beaten with a small broom, and the pieces of glue which have not dissolved completely are kneaded with the hands until they do so; then the whole is passed through a sieve. For further use it is diluted with one pint of white wine per barrel."

Once again The Practical Winery offers the material contained in the Vintage Ideas section only as historical insight, even though several of the finings noted are in current use. As with all wine treatments, proper lab trials are of course recommended.

## LEES FINING (Editors note)

Although I have never seen this documented, I am told it is common in Germany to fine lesser wines with the lees of the better quality, more flavorful wines in the hopes of improving the flavor of the lesser wines, i.e. the lees of the spatlese and auslese wines are mixed in the QBA wines for their betterment.

This past vintage we fined a tasteless white Mission with the lees of a very flavorful Sauvignon Blanc and not only was the fruit character improved, but the mouth feel became less flat and oily as white Mission can be. Thus you may not be able to recover all the wine from the lees, but you can recover the flavor components.

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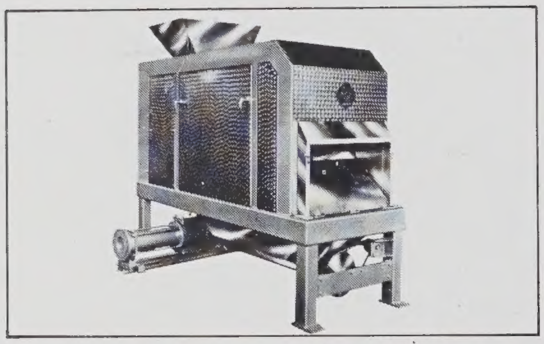

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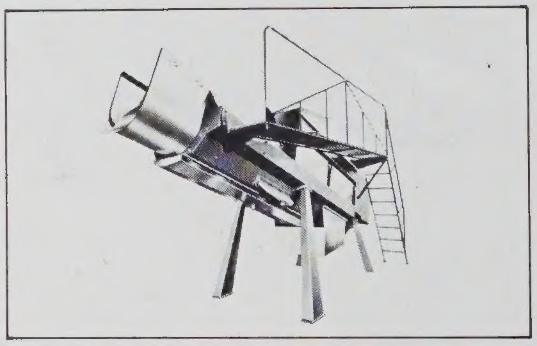

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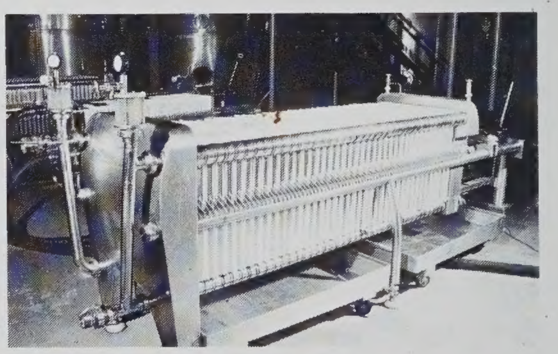

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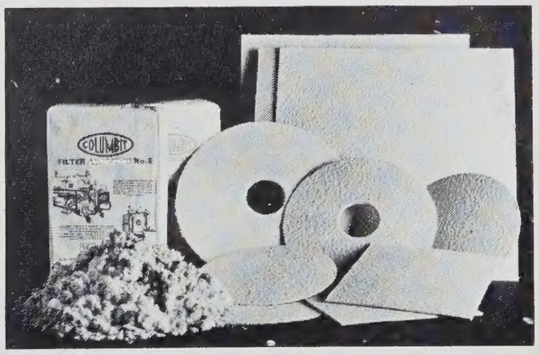

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